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Reconsideration of Baltic Amber "*Sinalda*" with description of a new genus and species (Hemiptera, Heteroptera, Tingidae)

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A b s t r a c t : Three fossil species are presently assigned to the African Tingidae genus *Sinalda* DISTANT 1904: *S. baltica* (DRAKE 1950), *S. froeschneri* GOLUB & POPOV 1989, *S. applanata* GOLUB & POPOV 2005, all of them described from Baltic Amber inclusions. As the extant 14 species show an exclusive sub-Saharan distribution (FROESCHNER 1996, GÖLLNER-SCHEIDING 2004) we reconsidered the systematic assignment of the species from Baltic Amber to the genus *Sinalda*. As a result, a new genus *Parasinalda* nov.gen. is proposed. As type species we designate *S. baltica* and *S. froeschneri* and *P. groehni* nov.sp. are also considered to belong to this genus. The taxonomic status of *S. applanata* could not be cleared.

K e y w o r d s : Hemiptera, Heteroptera, Tingidae, Cantacaderinae, Phatnomatini, new genus, new species, *Sinalda*, Baltic Amber.

Introduction

DRAKE 1950: 153 described *Phatnoma baltica* which was transferred to *Sinalda* DISTANT 1904 by FROESCHNER 1996: 35. GOLUB & POPOV 1989: 235 added *S. froeschneri* and 2005: 279 *S. applanata*. The genus *Sinalda* DISTANT 1904, was erected for the type species *S. elegans* DISTANT 1904 from South Africa. To date 14 species are assigned to this genus (FROESCHNER 1996, GÖLLNER-SCHEIDING 2004). Their geographic distribution is "confined to southern Africa, where their range extends from Kenya south to the tip of the continent" (FROESCHNER 1996: 34).

After studying an unreported inclusion of *S. baltica* and another habitually similar specimen and comparison with descriptions of African *Sinalda* species (e.g. DRAKE 1956, DRAKE & RUHOFF 1961, FROESCHNER 1968) we doubted that the fossil taxa can be placed in this extant African genus. Reconsideration of characters led to the opinion, that they should be assigned to a new genus *Parasinalda* nov.gen. comprising *S. baltica*, *S. froeschneri* and *S. groehni* nov.sp. "*Sinalda*" *applanata* does not share the essential characters of *Parasinalda* (e.g. bilobate paranota, 8 cephalic tubercles which are not visible in holotype) and is regarded therefore as a species of Phatnomatini incertae sedis.

Measurements were taken with a micrometer eyepiece and are given in millimetres.

Taxonomy

***Parasinalda* nov.gen.**

S y s t e m a t i c p o s i t i o n :

Order: Hemiptera

Suborder: Heteroptera

Infraorder: Cimicomorpha LESTON, PENDERGRAST & SOUTHWOOD 1954

Superfamily: Tingoidea LAPORTE 1833

Family: Tingidae LAPORTE 1833

Subfamily: Cantacaderinae STÅL 1873

Tribe: Phatnomatini DRAKE & DAVIS 1960

D i a g n o s i s : Body of oval outline. Head porrect in front of eyes, dorsally bearing 8 tubercles: an unpaired clypeal and dorsomedial one and paired jugal, frontal and occipital tubercles. Pronotum with deeply sinuate lateral margins and bilobate paranota; its anterior disk shorter and elevated with concave anterior margin; posterior disc longer, slightly convex with three longitudinal carinae, the lateral ones shorter than the median one; surface areolate; posterior margin feebly convex without posterior projection. Hemelytra divided into costal, subcostal, discoidal and sutural areas by longitudinal elevated veins, the discoidal area divided by two elevated transverse veins into three large parts, surface covered with areolae which are larger on costal area; clavus triangular, distinct and exposed, anteriorly uncovered by pronotum, separated from corium by comissa.

T y p e s p e c i e s : *Phatnoma baltica* DRAKE 1950.

Included species:

Parasinalda baltica (DRAKE 1954) nov.comb.

P. froeschneri (GOLUB & POPOV 1989) nov.comb.

Parasinalda groehni nov.sp.

C o m p a r i s o n a n d d i s c u s s i o n : The new genus shares few characters (e.g. structure of head and hemelytra) with the African genus *Sinalda* DISTANT 1904 which led FROESCHNER 1996 to transfer the first described species from Baltic Amber *Phatnoma baltica* DRAKE 1950 to *Sinalda*. It differs however at first glance by the bilobate not straight or concave lateral margins of paranota and by much wider costal areas of hemelytra, which are 4-5 seriate in *Parasinalda* and uni- or biserrate in African taxa.

In addition to morphological differences between *Sinalda* and *Parasinalda* it is very unlikely, without evidence and mismatching palaeogeographical data, that Baltic Amber taxa which inhabited Northern Europe at Eocene time are related to extant Afrotropical genera. There is rich palaeontological evidence that Cenozoic faunas were independently formed in these two geographical zones under very different climatic conditions widely separated from each other.

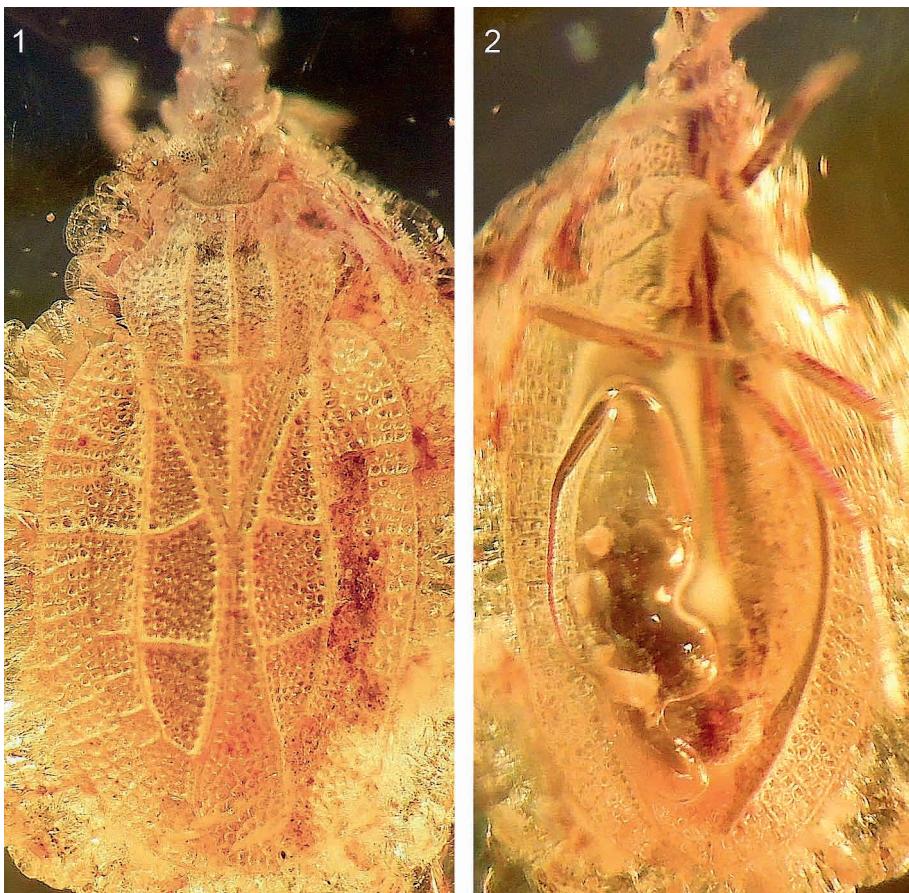
The taxonomic position of *Sinalda applanata* GOLUB & POPOV 2005 (Fig. 7), also described from the Baltic Amber remains unresolved. Its assignment to this genus was based on its resemblance to the type species *Sinalda elegans* (DRAKE 1950) showing the concave paranotal margins (illustrated in FROESCHNER 1986, Fig. 35). However details of head and hemelytra structures of *S. applanata* holotype could not be studied in detail

as these parts were obscured by impurities in the Amber inclusion. Therefore the question of the systematic position of *S. applanata* remains open unless further material is available for study, considering the present status of this species as incertae sedis in Phatnomatini (Tingidae, Cantacaderinae).

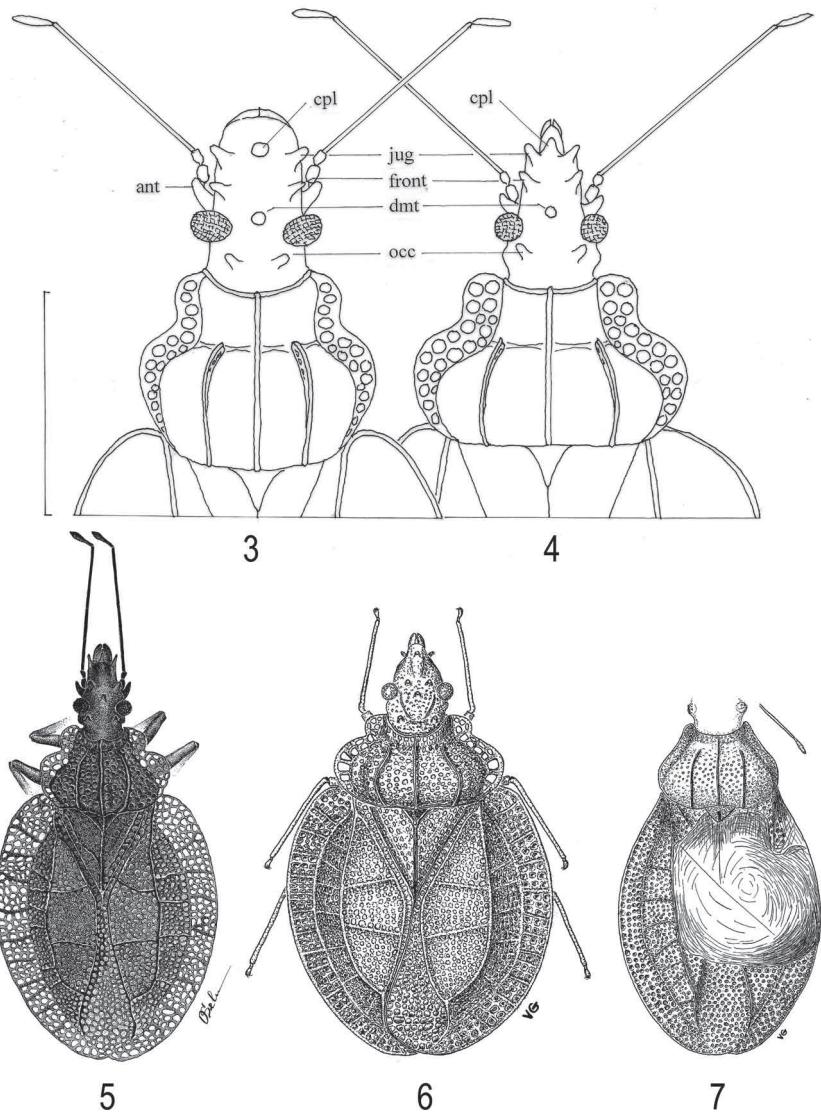
***Parasinalda groehni* nov.sp. (Figs. 1, 2, 3)**

H o l o t y p e : Male, preserved in an oval piece of honey coloured Baltic Amber, 29 x 13 x 3mm, dorsal side well visible, ventral side partly obscured by an air bubble. This specimen is designated as holotype and deposited in the collection of Carsten Gröhn (Glinde Germany) "Coll. Gröhn 5294, GPIH 4410".

D e s c r i p t i o n : Submacropterous male. Body elongate, about 2,2x as long as wide; surface of head, thorax and hemelytra covered by areoale of different size; colouration uniformly light-brown.



Figs. 1-2: Holotype male of *Parasinalda groehni* nov.gen., nov.sp.: (1) dorsal view; (2) ventral view.



Figs. 3-6: *Parasinalda* nov.gen. (3) head and pronotum of *P. groehni* nov.sp.; (4) head and pronotum of *P. baltica* nov.comb., male from coll. E. Heiss; (5) *P. baltica*, female, dorsal view; (6) *P. froeschneri* nov.comb., holotype female(?), dorsal view. **Fig. 7:** *Sinalda appanata*, holotype female, dorsal view. Abbreviations: ant – antenniferous lobes; cpl – unpaired clypeal tubercle; dmt – unpaired dorsomedial tubercle; front – frontal paired tubercles; jug – jugal paired tubercles; occ – occipital paired tubercles. Scale for Figs. 3-4 – 1mm. Figs. 5,6 after GOLUB & POPOV 1998, Fig. 7 – after GOLUB & POPOV 2005.

H e a d : Strongly elongate, 1.46x as long as width across eyes; preocular porrect part in front of eyes 1.25x as long as its width, its apex rounded with contiguous bucculae; dorsal side convex with flat small areolae, with 8 short conical and blunt tubercles, directed obliquely upward: one pair jugal, one frontal and one pair occipital, two unpaired shorter but stouter tubercles dorsomedially, the anterior one placed between the jugal pair, the posterior one on vertex between the eyes; antenniferous lobes large and conical, directed anterolaterally at a lower level; antennae bent to ventral side and hardly discernible in lateral view with short segment I and II and long segment III; eyes of oval outline and very large, inserted in head, width of intraocular space 0.2 mm, diameter of eye 0.2 mm.

P r o n o t u m : 1.34x as wide as long with areolate surface, the areolae smaller than those of paranota; lateral margins sinuate, constricted anteriorly, paranota bilobate, flat and laterally expanded with one row of areolae on anterior and posterior part and a second row at middle; anterior disc shorter and elevated with concave anterior margin; posterior disc longer, slightly convex with three longitudinal carinae, the lateral ones shorter than the median one, only reaching to transverse impression between anterior and posterior disc; the carinae partly with indistinct small areolae; posterior margin feebly convex without a median triangular projection.

S c u t e l l u m : Small and triangular, with a low longitudinal median crest almost along its entire length.

H e m e l y t r a : Sutural area of submacropterous hemelytra overlapping and projecting over apex of abdomen; stenocostal area not developed; costal area wide, with 4 rows of larger round areolae along most of its length, basally with a 5th row and about 11-12 transverse veins; subcostal area with 6 rows of smaller areolae at middle, its number reduced anteriorly and posteriorly, whole area divided by 6 transverse carinate veins; vein RM delimiting subcostal and discoidal areas is strongly carinate; discoidal area flat and wide, with 8 rows of small areolae at its median section and 2 carinate transverse veins dividing this area into 3 larger sections; clavus triangular, distinct and exposed, anteriorly uncovered by pronotum, separated from corium by comissura; disc with a median longitudinal carina, lateral parts with 5 almost regular rows of areolae at the widest part; sutural area with 1 row of almost rectangular areolae along clavus and inner margin of hemelytra reaching membrane and a 2nd one at base; membrane with 7-8 irregular rows of smaller areolae at its widest part.

V e n t r a l s i d e : Labium long, exceeding posterior coxae; abdomen narrower than hemelytra, hypocostal lamina developed.

L e g s : Femora and tibiae cylindrical, tarsi 2-segmented with curved claws.

M e a s u r e m e n t s (in mm): Length 4.1; width across hemelytra 1.85; head length / width across eyes 0.875/0.6; length of head from apex of clypeus to anterior margin of eye / width across anterior margin of eyes 0.5/0.4; length of antennae approximately 1.4; pronotum length / width at widest part 1.07/0.8, width across anterior lobe 0.725.

E t y m o l o g y : This new species is dedicated to Carsten Gröhn, who submitted this interesting specimen for our study.

D i s c u s s i o n : The new species belongs to the group of fossil Eocene species of the genus *Parasinalda* nov.gen. with wide bilobate paranota and multiseriate costal area: *P. baltica* (DRAKE 1950) and *P. froeschneri* (GOLUB & POPOV 1998). *P. groehni* nov.sp. is most closely related to *P. baltica*. It differs however by the broadly rounded anterior

margin of head and larger oval eyes, by narrower posteriorly more constricted paranota with one row of areolae almost along its entire length and only few areolae in a second row at widest part, the costal area of hemelytra with 4 rows of areolae at middle section, by subcostal area with 6 rows of areolae at its widest part and by discoidal area with 8 rows of areolae at its widest part.

In males of *P. baltica* the anterior margin of head is narrow and bucculae are produced and not contiguous, paranota possess 2 rows of areolae along their entire length and the posterior lobe is more broadly rounded, costal area shows 3-4 rows of relatively large areolae at middle section (5-6 in female), the subcostal and discoidal areas have 6-7 and 9 rows of areolae at their widest parts respectively (GOLUB & POPOV 1998).

P. froeschneri differs from *P. groehni* nov.sp. at once by its much wider body (only 1,6x as long as wide across hemelytra) and broadly rounded posterior lobes of paranota, these biserrate along most of their length and by subcostal and discoidal areas with 7 and 9-10 rows of areolae at their widest parts respectively (GOLUB & POPOV 1998).

Key to species of *Parasinalda* nov.gen.

- 1(2) Paranota with 1 row of areolae almost along their entire length, only median widest part with few additional areolae in a 2nd row; costal area of hemelytra with 4 rows of areolae at middle; subcostal area with 6 rows at middle and single areolae of the 7th row at widest part; discoidal area with 8 rows of areolae. Largest species, 4.1 mm.....
.....*P. groehni* nov.sp. (Figs 1-3)
- 2(1) Paranota with 2 rows of areolae along anterior 2/3 of their length, costal area of hemelytra with 4-6 rows of areolae at middle; subcostal area with 6-7, discoidal area with 9-10 rows of areolae at their widest part.....3
- 3(4) Body elongate oval, about 2.0-2.2x as long as wide; outline of overlapping hemelytra at rest narrowly rounded; pronotum 1.25-1.35x as wide as long. Larger species, 3.9-4 mm.....*P. baltica* (DRAKE 1950) (Fig. 4,5)
- 4(3) Body widely rounded, only about 1.6x as wide as long; outline of overlapping hemelytra at rest widely rounded; pronotum 1.65x as wide as long. Smaller species, 3.2 mm.....*P. froeschneri* (GOLUB & POPOV 1989) (Fig. 6)

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We thank Carsten Gröhn (Glinde, Germany) who made available for study this unique Baltic Amber inclusion and the editorial team of the "Linzer biologische Beiträge" for the quick publication of this paper.

Zusammenfassung

Die Untersuchung von Tingidae-Inklusen in Baltischem Bernstein hat gezeigt, daß die bisher zur rezenten afrikanischen Gattung *Sinalda* DISTANT 1904 gestellten Arten *S. baltica* (DRAKE 1950), *S. froeschneri* GOLUB & POPOV 1998 und *S. applanata* GOLUB & POPOV 2005 aufgrund unterschiedlicher Merkmale und biogeografischen Überlegungen nicht dazugehören. *S. baltica* und *S. froeschneri* werden nun einer neuen Gattung *Parasinalda* nov.gen., (Typus-Art *Phatnoma baltica* DRAKE 1950 = *Sinalda baltica* (DRAKE 1950)) zugeordnet und eine weitere, *Parasinalda groehni* nov.sp. neu beschrieben. Die systematische Zuordnung von *S. applanata* ist aufgrund verdeckter, zum Vergleich wichtiger Merkmale des Holotypus, nicht möglich und wird als species incertae sedis zum Tribus Phatnomatini gestellt.

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